

## NAVY NEWS WEEK 50-1

**12 December 2021**

### **Danish Prosecutors Seek to Bring Gulf of Guinea Pirates Home for Trial**

Danish prosecutors are looking for options to bring four captured pirates from the Gulf of Guinea to Denmark to face justice, and they are even examining the possibility of chartering a vessel to ship them all the way north. On November 24, the Danish frigate **Esbern Snare** was on an antipiracy patrol in the Gulf of Guinea when her crew spotted a suspicious skiff in international waters. The crew launched a helicopter to investigate. The helicopter crew spotted equipment associated with piracy in the boat, including ladders, so the **Snare** gave pursuit and launched a boat with a boarding party. The suspected pirate skiff did not stop when ordered, so the Danish forces fired customary warning shots. In response, the skiff's occupants opened fire on the helicopter and the boarding party, putting seven holes in the **Esbern Snare**'s launch. The Danish forces returned fire, killing four of the skiff's occupants. One more individual went over the side and is unaccounted for, and four suspects were captured, including one with severe injuries to his leg. (The limb was later amputated by **Snare**'s medical team.) A Danish court has granted prosecutors' request to hold the survivors in custody in absentia. With an extension, Danish officials have until December 22 to bring the suspects before the court for trial. That would be a simple matter if the arrest had occurred in the Baltic, but the case is complicated by the **Esbern Snare**'s location. Nearby West African states do not have legal arrangements in place for extradition by plane, nor could they provide certainty of local criminal prosecution under their own laws. "[Bringing them] home is a big logistical and diplomatic task. It has also been investigated whether you can charter a ship and sail them home, but there are logistical and administrative challenges with that," said special prosecutor Karen Moestrup Jensen, according to Danish outlet DR. If the suspected pirates are tried in a Danish court, their appointed attorney plans to argue that they shot at Danish forces in self defense - only after the **Esbern Snare**'s helicopter crew fired the first warning shots.

**Source: Maritime Executive**

### **Ukrainian navy ship sails away from Russian waters after 'provocation' – Moscow**

A Ukrainian naval vessel that was reportedly sailing dangerously close to Russian waters on Thursday evening has changed course and is now moving away, local officials have said. Russia's Federal Security Service (FSB) released a statement earlier saying that the Ukrainian command ship '**Donbass**' was sailing toward the Kerch-Yenikalsky canal, which connects the



Black Sea and the Sea of Azov, near Crimea, without prior notification to the Russian side.

The bridge connecting Crimea with the Russian mainland across the Kerch Strait. **Photo: Reuters/Pavel Rebrov**

According to the FSB, the intruder initially did not respond to demands to change course, but later turned around and began to sail away from Russian waters. "We view the actions of Ukrainian ship's crew as

provocative and a threat to the safety of navigation," the FSB said. Ukrainian Defense Minister Aleksey Reznikov told lb.ua that the '**Donbass**' was unarmed and spoke about "yet another case of disinformation by the Russian side." "In general, the waters of the Azov Sea are the waters of joint usage. We're operating there on legal grounds," Reznikov said. The FSB said that the ship was sailing at a distance of 18 nautical miles from the Kerch Strait before changing course. In a brief statement on social media, Ukraine's military said that the ship was operating in Ukrainian territorial waters without entering "sensitive areas." It added that the vessel was returning to its home base. The '**Donbass**' is a former Soviet auxiliary ship that was converted by the Ukrainian Navy into a flagship for its fleet following the dissolution

of the USSR. In 2014, it was briefly seized along with several other Ukrainian vessels when a number servicemen stationed in Crimea defected to Russia. The ship was returned to Kiev later that year after Crimea voted to leave Ukraine and join Russia. The incident came just as US President Joe Biden is set to hold a call with his Ukrainian counterpart, Volodymyr Zelensky. This follows talks on Tuesday with Russian President Vladimir Putin. The White House confirmed earlier this week that Biden plans to discuss ways to resolve mounting tensions between Kiev and Moscow. Biden and Putin spoke for roughly two hours via video link after claims by Western politicians and the media that Russia was amassing troops and military hardware for a potential invasion of Ukraine. Moscow repeatedly denied accusation of gearing up to attack its neighbour. According to the Kremlin, Putin told Biden that Russia was seeking guarantees that NATO would not expand further eastwards, despite Kiev's ambitions to join the US-led military bloc. The move, which could see more Western troops and military hardware stationed along Russian border, is viewed by Moscow as a 'red line'. During the conversation with Putin, Biden reiterated his support for Ukraine's sovereignty and called for "de-escalation and a return to diplomacy," the White House said. **Source: Russia Today**  
**Putin is looking for an acceptable (to the West) reason to attack Ukraine, in order to complete his project started in 2014.**

### **Kiev denies its warship entered any restricted zones**

**Ukraine's Defense Minister Alexei Reznikov said the command ship had legitimate reasons to sail in the Azov Sea**

KIEV, December 10. /TASS/.

The **Donbass** command ship of the Ukrainian navy did not enter any restricted zones during its voyage on Thursday and is now returning to the base, the press service of Ukraine's United Forces Operation headquarters said. *"The Ukrainian navy's Donbass ship did not enter sensitive zones. The warship is fulfilling assignments in its domestic territorial waters. At present, the Donbass is returning to the base,"* the press service said in a statement, posted on Facebook. In turn, Ukraine's Defense Minister Alexei Reznikov said the command ship had legitimate reasons to sail in the Azov Sea. In his words, the ship had no weapons on board. Reznikov told the 1+1 TV channel that Thursday's events posed no threat to the ship or its crew. *"I would like to inform everyone that there is no danger for our crew or the ship. The vessel has practically returned to the port, there were no incidents."* According to the Russian security service, the **Donbass** command ship of the Ukrainian Navy left the port city of Mariupol at 09:12 Moscow time on Thursday, heading towards the Kerch Strait. The Ukrainian side filed no requests for sailing through the Kerch-Yenikale Canal, a maritime route in the Kerch Strait connecting the Black Sea and the Sea of Azov. At 13:45, a Russian coast guard ship warned the **Donbass** that it must comply with the Russian law and apply for a permission to navigate the Kerch-Yenikale Canal. The ship's crew replied that it did not plan to sail via the Kerch Strait. However, the vessel kept sailing towards the Kerch Strait and ignored commands to change course.

**Source: TASS Defence**

### **Navy stands up new group to prevent another Bonhomme Richard-like fire**



**Bonhomme Richard** burns on 13 July 2020 but the flag still flying aft. Photo: US Navy

The Navy command in charge of designing, building and maintaining ships has stood up a new team aimed at preventing the kind of industrial shipboard fire that destroyed the amphibious assault ship **Bonhomme Richard** in July 2020. But its more challenging task may lie in its aim to change the sea service's cultural mentality when it comes to preventing such mishaps. Naval Sea System Command's new Industrial Fire Safety Assurance Group will provide an office focused on analysing shipboard fire metrics and developing policies to reduce such risks, according to a statement announcing the new group. It will also aim to

standardize shipboard fire reporting processes. The Navy has charged a junior sailor, Seaman Apprentice Ryan Sawyer Mays, with starting the **Bonhomme Richard** blaze July 12, 2020, while the ship was undergoing pricey upgrades in San Diego. But an investigation released this fall found that, while Mays allegedly started the fire, failures at several Navy echelons prevented it from being extinguished, leading to a multi-day inferno and the ultimate scrapping of the billion-dollar ship earlier this year. While the Navy has charged a junior sailor with starting the fire last summer, a command investigation lays blame for the botched response at all levels of command. The Navy has had 14 major shipboard fires in the past 12 years, including the 2012 fire aboard the submarine **Miami**, which led to the scrapping of that boat. Those fires have cost the Navy more than \$6 billion, while affecting maintenance and deployment schedules as well. The Navy pushed out a variety of new guidance and regulations following the **Miami** disaster, but according to the **Bonhomme Richard** investigation, those post-**Miami** lessons and policies were not properly disseminated to the fleet. NAVSEA's new fire safety group will pay particular focus to hot work and electrical fires, which have been the "top offenders" when it comes to shipboard fires, according to the Navy. Other common shipyard fire dangers include material handling, stowage and a failure to comply with existing fire safety requirements, the group's director, Eric Duncan, said in a statement. "One of the most important functions of the (group) will be to collaborate and share lessons learned with key stakeholders in shipbuilding and maintenance," the group's deputy director, Brian Berchtold, said. "(The group) will drive change across the NAVSEA enterprise that will significantly improve the overall fire safety posture for ships in industrial environments." **Source: Navy Times**

**To me they seem problems caused by a lack of discipline.**

### **Another Major Iranian Warship Accident**



The Iranian Navy seems to have more bad luck than most when it comes to warship accidents. On December 5 2021 their newest warship, **IRIS Talayieh**, which has not yet been commissioned, capsized in a partially flooded dry dock. The incident occurred in Bandar Abbas, Iran's primary naval base. It follows a spate of other major incidents over the past few years. This type of accident, where a ship capsizes in dry dock, is a serious risk in any navy. It has happened to other navies. However there have been at least four other major accidents since 2018. On January 10, 2018 the frigate **IRIS Damavand**, sunk after rounding on a sea wall during a storm. Like **Talayieh**, it was a brand new Moudge Class light frigate. Its loss, so soon after entering service, was seen as a major blow to Iran's modernization efforts. Then on May 11, 2020 the Support Vessel **IRIS Konarak**, was hit by a missile during live firing exercises. It caught fire, essentially destroying the superstructure and partially sinking the boat. On Jul 31, 2020 a fake Aircraft Carrier, used as a target in wargames, sunk accidentally during tow. It nearly blocked the entrance to Bandar Abbas harbour and was a hazard to navigation for months until it was finally broken up, partly by the tide. Unlike the other examples this was part of the IRGC, not the regular navy. And finally, before this latest accident, the veteran fleet replenishment ship **IRIS Kharg** caught fire and sunk on June 2 2021.

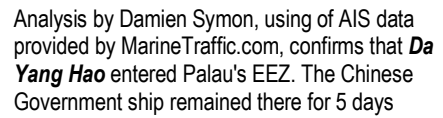


**IRIS Talayieh.** Photo: Mehdi H, Twitter

It would be hasty to jump to conclusions. Certainly there does not appear to be a clear common thread between the incidents. Contributory factors overall may include lower levels of crew proficiency, less of an eye on safety, many old vessels and crude construction of new vessels. However it is hardly straightforward as each incident is very different from the last. **Source: Covertshores**



China's growing fleet of survey ships continue to cause friction in the Pacific region. One of the most modern and capable has been operating in the small country of Palau's Exclusive Economic Zone (EEZ). This emphasizes the strategic importance of the small island chains in the region.



Sea and the North Pacific. Using ship tracking data provided by MarineTraffic.com we can confirm that the Chinese vessel was operating in Palau's Exclusive Economic Zone (EEZ). Based on the vessel involved, the survey could relate to undersea hydrocarbon or mineral resources. Alternatively, it could be a sea-bottom mapping missions or gathering data on the waters. The data could have a dual civilian and military use and is particularly relevant for submarine warfare. In any case it would need permission from Palau's government to operate there. In spite of its presence being challenged, the ship appears to have conducted its activity unimpeded. It was there for 5 days, from November 29 until December 4, 2021. Local authorities raised their concerns, as reported by the **Island Times** on December 3. Palau's Maritime Security and Fish & Wildlife Protection (DMSFWP) were keeping track of it, but had been unable to act. Palau requested assistance from the U.S. Coast Guard. Analysis of the AIS (Automated Identification System) data by Damien Symon, a geo-intelligence analyst, followed the vessels path. It appears to have reached its survey area in the West Philippine Sea around November 22. It then ran up and down an underwater feature known as the Kyushu-Palau Ridge. Based on the analysis, the ship had clearly entered Palau's EEZ by November 30. It spent some time there, tracing the lines of significant underwater features, before returning north again. The pattern of movement is indicative of sea floor survey. As is the fact that it followed a significant underwater feature, principally the Kyushu-Palau Ridge. Surveys of this nature require the permission of the country's whose EEZ it is. Additionally, all mining (and fishing) is banned in the waters where the Chinese ship was. It is part of Palau's massive National Marine Sanctuary (PNMS) which covers 80% of its EEZ, roughly 200,000 square miles. The remaining 20% is set aside for domestic fishing. This uses traditional methods and only supplies local markets. **Da Yang Hao** is one of the most modern, and capable, of China's ocean-going survey vessels. When it was launched in December 2018 it was considered China's first '*global ocean-resource research vessel*'. It was designed by China's 701 Research Institute and is operated by the Ministry of Natural Resources. This implies a role in the exploration of natural resources. But it is more versatile than that and boasts a large capacity for laboratories and equipment. The 98 meter long, 4,780 ton, ship has already

The same survey vessel was previously reported operating in the in the South China Sea in September. This took it inside the EEZ's of Brunei, Malaysia, and the Philippines. It is unclear whether

it had their permission. Palau and other smaller countries in the region are less able to challenge the apparent unauthorized survey of their EEZ. Despite its strategic location, which could place it on the frontline of future naval actions, Palau is one of the few countries without any armed forces. Instead, it relies on the United States for protection, and there is a growing US presence on the islands. The police service does operate two small patrol boats, but these were apparently unable to reach the Chinese ship due to the weather. In the past Palau has called on the U.S. Coast Guard, typically stationed on Guam, for assistance. It has not been reported whether the US Coast Guard, or Palau's own patrol boats, ever met with the survey ship. Or what caused the ship to subsequently return north. However, circumstantially, it appears that it simply completed its mission, seemingly uninhibited. The **Island Times** reported that it left of its own accord on December 4, after spending about 5 days in Palau's waters. The data gathered in these types of survey has relevance in undersea warfare, particularly for submarines. The Kyushu-Palau Ridge will be an important feature in submarine operations. And knowing its details may help China in this regard. The alternative explanation, that the survey was about natural resources, will not be more reassuring for Palau or other regional players.

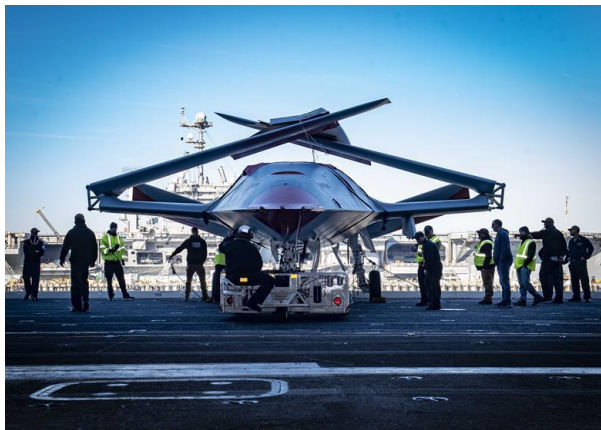
Source: **NavalNews**

## **MQ-25A starts deck handling tests aboard aircraft carrier USS George HW Bush**

By [Garrett Reim](#)

3 December 2021

A Boeing MQ-25A Stingray unmanned in-flight refuelling tanker was hoisted aboard an aircraft carrier for the first time this week to start initial deck handling tests. Testing is being conducted aboard **USS George HW Bush** at Naval Station Norfolk, Virginia and will provide an early evaluation of how the MQ-25A operates on the deck of an aircraft carrier, the US



Naval Air Systems Command (NAVAIR) said on 3 December.

Source: US Naval Air Systems Command

Handling the MQ-25A on the deck of aircraft carriers is complex. The USN has previously said moving the unmanned air vehicle (UAV) in the tight and busy spaces of an aircraft carrier deck would likely be the most challenging part of the MQ-25A programme. The USN and Boeing have conducted mock deck handling tests on land, but never aboard an aircraft carrier. The service is

using a Boeing-owned test example of the MQ-25A, dubbed T1, for the initial tests. Tests "will involve T1 being driven around the flight deck while at sea to check its handling qualities, and the functionality and capabilities of the deck handling system", says NAVAIR. "This will include taxiing into and connecting to the catapult, clearing the landing area and various other manoeuvres." The USN intends to have the MQ-25A refuel all carrier-based aircraft in its fleet that have a refuelling probe. So far, the UAV has been tested refuelling a Lockheed Martin F-35C stealth fighter, Boeing F/A-18 Super Hornet and a Northrop Grumman E-2D Advanced Hawkeye airborne early warning aircraft. Mastering deck handling is important for getting the Stingray into service quickly. The service wants the unmanned in-flight refuelling tanker to extend the range of its aircraft, which would better enable it to operate carriers beyond the reach of adversaries' weapons. For example, the F-35C's 1,200nm (2,220km) range is seen as too short to strike targets within China or Russia without risking sailing a carrier too close to those adversaries' shores – potentially within reach of land-based anti-ship missiles and aircraft. The USN has said it wants the MQ-25A to achieve initial operational capability by 2024. Boeing is lending the service a test example of the Stingray to speed along the type's path to deployment. The USN plans to buy as many as 76 examples of the aircraft as part of its programme of record.

Source: <https://www.flightglobal.com>

## **Nigerian Navy commissions large number of new vessels**

Written by Guy Martin -  
10th Dec 2021



The Nigerian Navy on Thursday commissioned dozens of new vessels and aircraft during a ceremony attended by President Muhammadu Buhari at the Naval Dockyard in Lagos. This included indigenously built boats. Highlights of the ceremony included the commissioning of the third locally built Seaward Defence Boat (**NNS Oji**) and the keel laying of the fourth and fifth boats at the Naval Dockyard. The first (**NNS Andoni**) was launched in 2012 and the second (**NNS Karaduwa**) in 2016. The Chief of Naval Staff

(CNS), Vice Admiral Awwal Gambo, said the event marked another milestone in the history of the Nigerian Navy. He further stated that with the experience garnered so far, the Naval Dockyard Limited is adequately poised to take on the challenge in pursuit of the Federal Government of Nigeria's Local Content Development effort. South Africa's Paramount division Nautic Africa is believed to have assisted the Naval Dockyard with delivering the third Seaward Defence Boat. The Nigerian Navy has acquired a number of rigid-hulled inflatable boats (RHIBs) from Paramount in the past. Other vessels commissioned on 9 December included two Damen FCS 4008 patrol vessels (**NNS Kano** and **NNS Ikenne**), two Aresa 1700 inshore patrol boats, four Manta Mk II fast patrol craft, two FPB 110 fast patrol boats (**NNS Sokota** and **NNS Aba**), an FPB 72 Mk II fast patrol boat (**NNS Osun**), and dozens of RHIBs. On the aviation side, a Leonardo Helicopters AW139 was also commissioned. The Damen vessels were built by Damen Song Cam shipyard in Vietnam and were delivered around June/July this year. The FCS 4008 Patrol features Damen's Sea Axe design for improved seakeeping. This enables top speeds of 29 knots and a range of over 2 000 nautical miles in sea states that Damen says would slow down other vessels of the same size. The FCS 4008 is just over 40 metres long and has a 140m<sup>2</sup> aft deck and can be used for transporting personnel and cargo. The Aresa boats are part of four that were completed by the Spanish company for the Nigerian Navy. The first (P494) was launched in April and Aresa said in September that the boats had been shipped. The Aresa 1700 (Fighter II class) is built from aluminium and is 17 metres long, with each vessel displacing 7.6 tons. The type is powered by two MTU engines delivering 1 250 hp, giving a top speed in excess of 40 knots. A RHIB can be carried at the rear of the vessel and launched by what Aresa calls its vertical launching system. Malaysia's Northern Shipyard completed the four Manta Mk II craft in December 2020 after receiving a contract from Suncraft International. They were delivered to Nigeria at the beginning of this year. The Nigerian Navy is a repeat customer for the Manta Mk II and by 2013 had taken 22 of the 17 metre long vessels into service. The Suncraft International Manta Mk II is powered by two 1 200 hp diesel engines, giving a top speed of between 45 and 50 knots. France's Ocea has supplied a large number of vessels to Nigeria, including the hydrographic survey ship **NNS Lana**. In October, Ocea announced that the Nigerian Navy had ordered a 35 metre hydrographic survey vessel (OSV 115 SC-WB). Over the last eight years Ocea has supplied one FPB 98 Mk I patrol vessel, eight FPB 72 Mk II, two FPB 110 and two FPB 110 Mk II patrol vessels to Nigeria in addition to four C-Falcon interceptors. The FPB 110s **NNS Sokota** and **NNS Aba** were delivered at the end of 2020 along with the first two C-Falcons. Gambo said the newly commissioned vessels will be deployed for surveillance and patrol duties within Nigerian territorial waters. President Buhari for his part reiterated the Federal Government's commitment to properly equip the Nigerian Navy with the right mix of platforms. He added that given Nigeria's present high dependence on oil and gas revenues, the Navy is undeniably a major contributor to the economic well-being of the country. The President also commended the Nigerian Navy's effort in the fight against maritime crimes in Nigerian waters and the Gulf of Guinea region and noted the arrests of those involved in



illegalities has yielded results as some pirates, illegal bunkering syndicates, pipeline vandals and other criminals have been convicted during the year. He attributed these successes to the enforcement of Nigeria's new anti-piracy law on Suppression of Piracy and Other Maritime Offences Act 2019.

Source: <https://www.defencewebsite.co.za>

## **USS The Sullivans conducts interoperability exercise with Tunisian Navy**

Written by deefnceWeb -

1st Dec 2021



**USS The Sullivans.**

The US Navy's Arleigh Burke-class guided-missile destroyer **USS The Sullivans (DDG 68)** and Tunisian Navy offshore patrol vessels **TNS Jugurtha (P610)** and **TNS Carthage (P503)**, conducted multiple tactical operations to enhance maritime security and increase interoperability between the two navies in early November. *"Working side by side with our Tunisian partners was the perfect end to our multi-national interoperability*

*deployment,"* said Commander James Diefenderfer, commanding officer of **The Sullivans**. *"Learning from our Tunisian shipmates improves the overall coordination between our countries and our way of conducting operations at sea. I am grateful for this opportunity to work so close as with our African partners."* The two navies executed a visit board search and seizure (VBSS) exercise, search and rescue (SAR) integrated training, simulated air defence exercises, tactical manoeuvring exercises and a live fire exercise between 5 and 6 November, the US Navy said. During the boarding exercise, a United States Naval Academy (USNA) 2020 graduate was a part of the VBSS team from the **TNS Jugurtha (P610)**. He was a foreign exchange student, from Tunisia, in 8th Company at USNA. While on board, he had the opportunity to reunite with two of his classmates who are stationed aboard **The Sullivans**, Ensign Gabriella Baltimore and Ensign Megan Gravette. *"It was such a surprise to see a classmate from the USNA during a multi-national exercise with the Tunisians,"* said Ensign Gabriella Baltimore. *"I did not expect to see a familiar face during deployment, let alone from another country's Navy. This reunion goes to show the connections we made at USNA are life long and across many borders."*

Source: <https://www.defencewebsite.co.za>

## **Royal Navy in the News**

### **HMS Diamond and HMS Defender return home**



Destroyers **Defender** and **Diamond** received a warm welcome from families after completing a landmark deployment. The two ships sailed into Portsmouth Naval Base 60 minutes apart – and a few hours ahead of the nation's flagship, aircraft carrier **HMS Queen Elizabeth**. The duo left the Portsmouth back in May as part of a nine-ship force – seven of them British – with the flagship at the centre on her maiden deployment to the Pacific Rim. Both Type 45 warships formed part of the defensive ring of ships

formed around the carrier, fulfilling their principal role of watching out for aerial threats. During the deployment there were opportunities to break away from the core task group and operate independently or with allies, such as **Defender's** extremely high-profile patrol of the Black Sea in June. **Defender** escorted five aircraft carriers in addition to the UK flagship, worked with the military of 18 allied and partner nations and hosted 18 events to promote

Britain's global ambitions. The ship also had the chance to shine away from the task group, playing the lead UK role with major Commonwealth powers in the large-scale exercise Bersama Gold off the Malay Peninsula in October. She also had a key mission in support of **Operation Shader** – operations against Daesh in the Middle East. As well as warning off threats in the skies, the destroyer is also able to direct the operations of the carrier's F-35 stealth fighters. The deployment took **Diamond** further east – and south– than she had ever been before in her ten-year career.

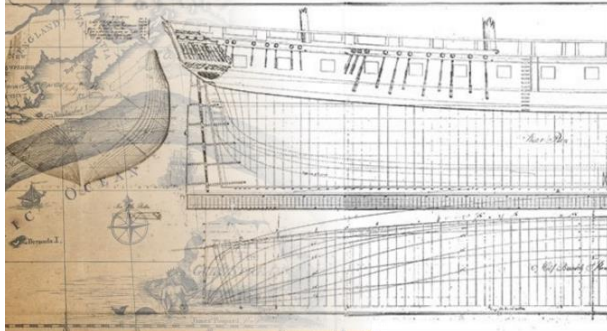
Source: [www.navybooks.com](http://www.navybooks.com)

## **The Influence of Technology on Fleet Architecture**

[August 16, 2021](#)

### **Emerging Technologies Topic Week**

By J. Noel Williams



Composite of: "[A chart of the Gulf Stream](#)" by Benjamin Franklin and James Poupard, (Philadelphia, Pa. : American Philosophical Society, 1786?); and, "[Sheer, Half Breadth and Body Plan](#)" after Joshua Humphreys' 1794 design, depicting the structure of the three 44-gun frigates, **United States**, **onstitution**, and **President** (Courtesy Naval History & Heritage Command Detachment Boston, image hosted at USS Constitution Museum).

*"The fundamental error in a debate over robotic development is to think that we have a choice. This world is coming, rapidly coming. We can say whatever we want, but our opponents are going to take advantage of these attributes, and that world is likely to be sprung upon us if we don't prepare ourselves."* —Captain Wayne Hughes Jr. USN (ret).

Today's maritime security environment recalls the early days of the United States Navy, when its economic and geographic limitations helped create a technologically bold yet focused fleet architecture. Just as the United States Navy couldn't out build its rivals then, it can't out build the Chinese Navy today. Even so, by drawing from its best traditions, and implementing a fleet design incorporating mission agile platforms and platform agile payloads, the Navy and Marine Corps team can affordably produce a fleet and fleet Marine force fit for purpose – even as those purposes change with the decades.

### **Past as Prologue**

While naval forces made important contributions during the Revolutionary War, it wasn't until the First Congress established the Revenue Cutter Service in 1790 and the Third Congress passed the Naval Armaments Act in 1794 that solid and enduring foundations were laid for the modern Coast Guard, Navy, and Marine Corps.<sup>1</sup> In the last decade of the eighteenth century, it took very specific and dramatic demands for a divided and parsimonious Congress to pass any legislation that expended substantial resources. The Revenue Act was driven by the economic necessity to collect customs duties and taxes, and to protect against smuggling close to home. The Naval Armaments Act likewise was born of the economic necessity to protect the overseas trade threatened by piracy and the depredations of the British and French navies. In 1794, marine insurance premiums for transatlantic shipping rose to 25% of total cargo value.<sup>2</sup> This expense impacted both shippers and farmers, thus providing a broad-based coalition in Congress for action. The Algerian xebecs, polacres, and feluccas, the FAC/ FIACs of the era, were fast enough to overtake most American merchantmen, allowing them to commandeer the ships and enslave their crews.<sup>3</sup> These pirates could act with impunity because the United States had no ships capable of addressing such a distant threat. British and French ships harassed U.S. flagged vessels without consequence. Fortunately, American innovators would leverage new technologies to answer these operational challenges. Congress solicited proposals for the design of six frigates; Joshua Humphreys, a Philadelphia Quaker, answered the call with a bold new warship. Humphreys proposed a unique design for a very stout frigate that could carry thirty 24-pounder long guns on the gun deck, which he calculated would allow the ship to challenge European ships of line in stormy weather conditions and outrun any ship posing a substantial threat. Many objected to Humphrey's radical design, but he countered with a



response especially relevant to our current circumstances. He said, *"It is determined of importance to this country to take the lead in a class of ships not in use in Europe, which would be the only means of making our little navy of any importance. It would oblige other powers to follow us intact, instead of our following them...It will in some degree give us the lead in naval affairs."*<sup>4</sup> Humphreys deserves tremendous credit for being not only a genius in the details of ship design but also in the larger strategic context and operational functions that influence ship design. The British naval historian, N.A.M. Rodger, would say he knew how to build a ship *"fit for purpose."* According to Rodger, *"The proper question to ask of all ship designs is not how well they compared with one another, but how well they corresponded to each country's strategic priorities, and how wisely those priorities had been chosen."*<sup>5</sup>

### **Techno-Strategic Environment**

Rodger's question is the central consideration for today's Naval Services (the United States Coast Guard, Navy, and Marine Corps). It is critical that strategy-derived functions and missions, operating concepts to accomplish these missions, and technological opportunity guide the development of naval forces to realize a fleet fit for the purposes required by national, defense, and military strategies. Measuring the benefit of a new platform by comparing its performance to its predecessor or comparing a class of ship to an adversary's like ship class does not answer the question. The Naval Services have a broad portfolio: They must ensure unhindered access to the global commons for trade and travel; they must be able to project power into regions and countries posing a security threat to the U.S., its allies, or its interests; and they must defend the homeland while also deterring nuclear and conventional conflict. While the eleven technology priorities identified by the Department of Defense (fully networked C2, 5G, hypersonics, Cyber/Info warfare, directed energy, microelectronics, autonomy, AI/ machine learning, quantum science, space, biotechnology), are essential areas for investment, the Naval Services must efficiently and effectively harness relevant emerging technologies to ensure an appropriate fleet design in the manner U.S. Navy recognized the power of the airplane in the 1930s and changed the fleet design to incorporate the aircraft carrier. How the Naval Services approach, develop, and implement these technologies must be in the service of strategy-driven objectives. The underlying technologies that have made the smart phone possible, namely microelectronics and efficient power storage, will be a motive force driving fleet design just as the airplane influenced last century's fleet. Strong commercial appeal has led to huge private investments driving the rapid evolution of these technologies, all of which are highly relevant to military communications, sensors, and weapons systems. Of the 11 DoD tech priorities, only directed energy and hypersonics are not robustly addressed by commercial consumer interests. This means the DoD must ensure its priorities for basic research are weighted accordingly – leveraging and adapting commercial S&T in the nine areas with heavy commercial sector investment, and focusing additional resources on directed energy and hypersonics.

### **Operation Environment**

Ubiquitous surveillance will have a profound effect on naval warfare. The range of modern surveillance methods, from HUMINT, social media, to an ever-expanding range of technical systems across all domains means that potential adversaries will likely know the general location of large ground formations and surface platforms. This operational environment is coming in the immediate future – despite robust signature control efforts. It is critical that this premise consistently inform systems acquisition and operational planning. The Navy defines this environment as Tactical Situation 2 (TACSIT 2): the enemy lacks the precise location of blue forces, but knows their general whereabouts. This should be a threshold metric for force planning—a force designed to survive and win under constant surveillance. As the range and capability of intelligence, surveillance, and reconnaissance systems continues to expand, it will be increasingly likely that peer adversaries will often know *exactly* where friendly forces are located – in Navy terminology, TACSIT 1. Thus, a force that thrives in TACSIT 1 should be the Navy's ultimate force design objective metric.<sup>6</sup> The Distributed Maritime Operations (DMO) concept demonstrates a recognition of the importance of these metrics, but the concept has yet to substantially modify fleet composition toward more numerous, smaller surface platforms, more submarines, fewer aircraft carriers, and more unmanned

systems. If the increasing level of surveillance is combined with evolving smart munitions that only require an approximate location for launch (given their ability to autonomously seek or receive in flight updates), then planners must assume that surface forces and large land formations are always targetable, regardless of signature management efforts. For the purpose of naval force design, friendly forces in range of adversary threat weapons system must be assumed to be targetable. This does not mean that signature management is a fruitless endeavour. Naval forces must continue to focus on signature management—not to defeat broad area surveillance intelligence surveillance and reconnaissance (ISR), but to defeat incoming enemy precision munitions in their terminal guidance phase. When coupled with electronic and physical decoys, military deception (MILDEC), obscurants (e.g. carbon fiber chaff), it will become increasingly difficult for the adversary to achieve a hit, provided that patrol locations are carefully managed based upon adversary weapon ranges and capacities. For ground-based missile systems, adding the ability to move rapidly into covered and/or concealed positions will allow these ground forces, likewise employing MILDEC and obscurants, to remain forward within the enemy's weapons engagement zone. Refining these capabilities and associated tactics, techniques, and procedures (TTPs) is vital, given that munitions using on board artificial intelligence will soon individually possess the equivalent of a self-contained battle management system. While defeating wide-area surveillance will be extremely difficult, designing a force to be survivable by addressing terminal phase vulnerability is a tractable problem. As Hughes and Girrier state in *Fleet Tactics*, “...a single countermeasure anywhere can break the chain of measures necessary for an attack.”<sup>7</sup> While it is prudent to assume our general locations are known and targetable, with the right force design (low-signature, dispersed, attritable, and leveraging unmanned systems) and force posture (distant enough to allow adequate time for spatial displacement based upon counterfire time of flight), one can make the opponent's terminal attack challenge exceedingly difficult and thus avoid being unacceptably vulnerable.

### **How to Dodge a Bullet**

The tactical objective is not to defeat broad area surveillance, but to defeat successful execution of the terminal phase of the precision fires attack. Once again, new technologies are making range an especially critical determinate in naval warfare. This phenomenon was the driving force behind the dreadnought competition of the last century when the rapidly increasing range and effectiveness of torpedoes, guns, and fire control argued for larger caliber guns to be able to engage adversaries at the maximum possible range.<sup>8</sup> Ever larger caliber guns were sought that could out-range adversary ships and overcome their protection, with the intention of being able to strike and neutralize an opponent before they were able to respond. While it is preferable to be able to attack with impunity, limiting the quantity of adversary munitions that can reach friendly forces is the next best choice. Because the densities of adversary weapons will decrease with distance, the greater the distance from which a friendly force can strike, the fewer adversary munitions will be available for counterbattery response. There are also considerations unique to Expeditionary Advanced Base Operations. Certain ships, like battle cruisers, were designed with large guns but reduced protection to facilitate speed, either to overhaul slower vulnerable targets or to outrun larger, better armed and protected battleships. Given their inherent vulnerability, battle cruisers had to choose their fights carefully. Similarly, close consideration must be given to engagement geometry when striking targets from an Expeditionary Advanced Base. Unlike a ship that can steam away to escape the range fan of an adversary, an EAB can only relocate limited distances to avoid attack. Because they remain within a “beaten zone,” the EAB force could be susceptible to pummeling attack. Thus, a system of EABs must have adequate munitions to substantially reduce the adversary's systems or be prepared to accept attack, perhaps persistent attack, if its initial salvo does not substantially attrite the foe. It will be necessary to understand the breakpoint where the initial salvo of EAB munitions are sufficient to adequately attrite the adversary such that the return salvo can be successfully defended against or that adequate time is available for displacement. Of course, if friendly missile forces can outrange the adversary in the first instance, then their survivability is assured, so long as the adversary cannot close the distance or employ longer-range munitions from another platform. If friendly forces attack within range of enemy

counterfire, but their weapon's time of flight is roughly 10 minutes or greater, shore-based batteries can find cover and concealment while also deploying physical and electronic countermeasures. This key distinguishing feature makes shore-based expeditionary anti-ship assets a unique contribution to the naval campaign. Thus, longer range munitions cover more target area, increase the chances of outranging enemy counterfire, and buy time to effectively employ survivability countermeasures against counterfire. For all these reasons, DoD investment decisions should preference long-range offensive munitions and the smallest, most efficient platforms possible to deploy them.

### **Technology and Fleet/ Force Design**

Technology is creating increased capability in ever smaller form factors, and this has profound implications for our fleet and force designs. *It will require mission agile platforms and platform agile payloads.* As the name implies, a mission agile platform is easily configured for a range of missions. This agility can come in two varieties. The **first** would be the quickest and is made increasingly possible by the fact that unmanned systems in all physical domains will be the primary sensors and weapons systems of future fleets, making larger more traditional platforms primarily [carriers of unmanned systems](#). Flight decks, well-decks, and open storage spaces would allow mission agile ships to shift mission by simply changing the load plan. The **second** variety will be more strategic and will allow for reconfiguration of the ship's systems themselves to adjust to longer-term mission and technology trends. Such modifications would be performed during shipyard availabilities. Given the centrality of unmanned systems operating in all physical domains, a mission agile ship would be configured to accept a wide-range of payloads and offer robust interfaces to air, surface, and subsurface with flight decks and dry or well decks, side stages, or other apertures. As a matter of design, this reconfigurability would not be like the previously envisioned LCS modules. As discussed above, operational tailoring, unlike the original LCS plan, is about taking on payloads that deploy off board. Reconfiguration of ship's system, again, would be a more deliberate affair, focused on maintaining fleet relevance by offering an alternative to current acquisition approaches that yield decades-latent solutions. Thus, the right fleet design offers both operational and strategic tailoring options. Agile ships would have multiple busses to provide for physical, electrical, and electronics interconnections. For example, a modular vertical launch system would allow for mission configuration but, could also potentially facilitate reload by pulling empty modules (such as several missiles in a module) and replacing it with a full one, thus simplifying packaging, transfer, and handling for expeditionary reload. This sort of forward reload would require a forward operating base or perhaps a large [semi-submersible platform](#) to allow a ship to drive under and have modules lowered into place, akin to the [Mobile Offshore Base](#) concept of the early 2000's. A fleet of small (<4000 tons), medium (<8000 tons), and large mission agile platforms (>8000 tons) would obviate the need for certain specialized platforms such as amphibious ships, thus the majority of the fleet could be tailored to a rapidly changing strategic environment given that these ships have space for different payloads, for example landing craft for an amphibious mission or unmanned surface or subsurface vessels for a sea control mission. This would provide options for increasing fleet fires in one instance and in another, provide scores of ships with amphibious, HA/DR, or engagement capabilities that would be especially relevant for grey zone operations and working with allies and partners. Some subset of these vessels should be ice hardened for operations in the polar regions. A fleet of such platforms would achieve far greater efficiency by greatly reducing ship specialization and therefore allowing a smaller fleet to have the effectiveness of a larger fleet. Platform agile payloads (especially unmanned systems) are the natural complement to their host, a mission agile platform. Expeditionary logistics ships could be designed for the purpose of carrying and installing payloads forward. Ubiquitous non-organic sensing, long-range, and loitering precision munitions reduce the size requirements for platforms. Most of these new, networked, and smaller platforms could forego crews and large radars with distinctive signatures. Removing just these two variables opens the design space substantially. Numerous, smaller, connected platforms would achieve efficiency and resiliency. Smaller platforms are cheaper platforms and can be produced in many more shipyards than a fleet of complex capital ships. Simply beginning the shift away from the aircraft carrier would



make adequate resources available to evolve the fleet within current top-line budget constraints. Technology trends will result in a fleet whose platforms are more numerous and more unmanned, carrying loitering munitions with the capacity for organic scouting. The Douglas SBD Dauntless was a potent armed reconnaissance platform in the Pacific Theater, playing a significant role at Midway.<sup>9</sup> Loitering munitions are the SBD of today – providing scouting and lethality in one package, but with fantastically more precision and endurance. The speed of engagements will be vastly quicker as hypersonics enter the inventory. To survive, platforms will need to stay at extended ranges, just as in the battleship era. Greater range will allow for response times to engage the threat weapon in multiple phases (e.g. boost, glide, terminal), and to employ military deception measures, obscurants, and non-kinetic countermeasures. Multispectral sensors are continuing to increase in capability and decrease in size, while their platforms gain ever more endurance. Space and airborne platforms receive a great deal of attention, but subsurface sensors are developing rapidly and [will challenge](#) the U.S. Navy's once unassailable domain advantage. The number and type of sensors that can be deployed affordably to detect friendly submarines and conversely those employed to detect adversary subs must be key considerations in developmental efforts.

### Conclusion

In the 1930s, aircraft spotting increased gunnery accuracy by 200%.<sup>10</sup> While we can't know what percentage improvements in accuracy we will see in the future, we are so close to perfection that the actual percentage matters little. The Joint Force already possess a family of networked sensors revolutionizing scouting analogous to aircraft revolution in the first decades of the 20<sup>th</sup> century. A capable battleship on the eve of World War II could fire eight tons of ordnance twice a minute, but at its maximum range of thirty thousand yards, it had a hit rate of only 5%.<sup>11</sup> As Hone states, *"Five percent of sixteen thousand pounds (eight tons) is eight hundred pounds. By 1941, one dive-bomber carrying one bomb weighing one thousand pounds could knock a carrier's flight deck out of action-and do it from a range of 150 nautical miles."*<sup>12</sup> Once this level of performance was achieved, and a war clarified the demand, no traditionalist arguments for the big guns could resist the inevitability these numbers portended. The efficiency of the aircraft was indisputable, and the only reasonable remaining battleship mission was shore bombardment. We are at such an inflection point today when manned aircraft begin to recede to different roles, while missiles and their supporting strike complex come to the fore. The United States can field a Fleet and Fleet Marine Force vastly more effective than today's fleet design. It is not about more money; it is about smart design fit for purpose. Humphreys would surely agree.

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### Endnotes

1. Ian Toll, *Six Frigates*, Norton, NY, 2006, p 43.
2. Toll p42.
3. Toll p36.
4. Toll p53.
5. N.A.M. Rodger, *The Command of the Ocean*, Norton & Co., NY, 2004, p. 409.
6. Commander Bryan Leese, USN, *Living in TACSIT 1*, Feb 2017 Proceedings
7. Captain Wayne Hughes Jr and RADM Robert Girrier, *Fleet Tactics and Naval Operations* third edition, Naval Institute Press, 2018, p 100.
8. Barry Gough, *Churchill and Fisher Titans at the Admiralty*, Seaforth Publishing, 2017, p 71.
9. Thomas Hone and Trent Hone, *Battleline: The United States Navy 1919-1939*. Naval Institute Press, Annapolis, 2006, p81.
10. Hone, p81.
11. Hone, p97.
12. Hone, p97.

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